

WHAT IS CLAIMED IS:

1. An optical fiber cable comprising:
 - a central reinforcing element (1);
 - a layer of optical fibers (4) surrounding the
 - 5 central reinforcing element (1);
 - a buffer layer (5) surrounding the layer of optical fibers (4); and
 - an outer sheath (7) surrounding the buffer layer (5);
 - 10 the cable being characterized in that it has only a single layer of optical fibers (4) surrounding the central reinforcing element (1);
 - in that the buffer layer (5) presses the bare optical fibers (4) into contact against the central
 - 15 reinforcing element (1) in such a manner as to couple them mechanically to the central reinforcing element (1); and
 - in that the majority of the volume of the buffer layer (5) is constituted by a material that is both solid
 - 20 and flexible.
2. An optical fiber cable comprising:
 - a central reinforcing element (1);
 - a layer of optical fibers (4) surrounding the
 - 25 central reinforcing element (1);
 - a buffer layer (5) surrounding the layer of optical fibers (4); and
 - an outer sheath (7) surrounding the buffer layer (5);
 - 30 the cable being characterized in that it has only a single layer of optical fibers (4) surrounding the central reinforcing element (1);
 - in that the buffer layer (5) presses the optical fibers (4) against the central reinforcing element (1) in
 - 35 such a manner as to couple the optical fibers (4) mechanically to the central reinforcing element (1) by contact between the bare optical fibers (4) and the

central reinforcing element (1), said mechanical coupling reducing relative longitudinal movements between the optical fibers (4) and the central reinforcing element (1) during temperature variations of the cable; and

5 in that the portion of the buffer layer (5) in contact with the bare optical fibers (4) is constituted by a material that is both solid and flexible so as to withstand radial flattening without exerting damaging mechanical stress on said optical fibers (4).

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3. An optical fiber cable according to claim 1 or claim 2, characterized in that the buffer layer (5) is mechanically coupled to the optical fibers (4) that it surrounds.

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4. An optical fiber cable according to claim 1, characterized in that the cable includes reinforcing and wrapping roving (6) disposed helically about the buffer layer (5) and in contact with the buffer layer (5).

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5. An optical fiber cable according to claim 1, characterized in that the cable includes a separator tape (6) disposed helically around the buffer layer (5) and in contact with the buffer layer (5).

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6. An optical fiber cable according to claim 1, characterized in that the solid and flexible material of the buffer layer (5) has a Young's modulus at 25°C which is less than 150 MPa.

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7. An optical fiber cable according to claim 6, characterized in that the solid and flexible material of the buffer layer (5) has a Young's modulus at 25°C which is less than 100 MPa.

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8. An optical fiber cable according to claim 6, characterized in that the solid and flexible material of

the buffer layer (5) is a solid (non-perforated) elastic material.

9. An optical fiber cable according to claim 6,
5 characterized in that the solid and flexible material of the buffer layer (5) is a foam.

10. An optical fiber cable according to claim 1 or claim 2, characterized in that the buffer layer (5) is
10 constituted exclusively by a single material.

11. An optical fiber cable according to claim 1, characterized in that the radial thickness (ect) of the portion of the buffer layer (5) situated outside the
15 circle (41) circumscribing the layer of optical fibers (4) is small enough for the buffer layer (5) to be easily tearable without a tool.

12. An optical fiber cable according to claim 11,
20 characterized in that the radial thickness (ect) of the portion of the buffer layer (5) situated outside the circle (41) circumscribing the layer of optical fibers (4) lies in the range 0.1 mm to 0.5 mm.

13. An optical fiber cable according to claim 12,
25 characterized in that the radial thickness (ect) of the portion of the buffer layer (5) situated outside the circle (41) circumscribing the layer of optical fibers (4) lies in the range 0.15 mm to 0.40 mm.

14. An optical fiber cable according to claim 11,
30 characterized in that the radial thickness (ect) of the portion of the buffer layer (5) situated outside the circle (41) circumscribing the layer of optical fibers (4) is less than the diameter (dfo) of a bare optical
35 fiber (4).

15. An optical fiber cable according to claim 1, characterized in that the layer of optical fibers (4) comprises both optical fibers and some filler elements.

5 16. An optical fiber cable including a central reinforcing element (1), and a plurality of optical fibers (4) surrounding the central reinforcing element (1), the cable being characterized in that the bare optical fibers (4) are pressed in contact against the
10 central reinforcing element (1) in such a manner as to be mechanically coupled to the central reinforcing element (1).

17. An optical fiber cable according to claim 1,
15 characterized in that the optical fibers (4) are disposed helically or in an SZ configuration about the central reinforcing element (1).

18. An optical fiber cable according to claim 1 or claim
20 16, characterized in that the central reinforcing element (1) comprises a central core (2) surrounded by outer sheathing (3), in that the outer sheathing (3) is mechanically coupled to the central core (2) by contact with the central core (2), and in that the modulus of
25 elasticity of the outer sheathing (3) is less than the modulus of elasticity of the central core (2).

19. An optical fiber cable according to claim 18 as dependent on claim 1 and according to claim 18 as
30 dependent on claim 16, characterized in that the central core (2) has a modulus of elasticity that is high enough to withstand traction exerted on the cable, and in that the outer sheathing (3) has a modulus of elasticity that is small enough to absorb at least in part the radial
35 mechanical stresses exerted by the central core (2) on the optical fibers (4).

20. An optical fiber cable according to claim 18 as dependent on claim 1, characterized in that the ratio between the diameter (d) of the central core (2) and the thickness (es) of the outer sheathing (3) is high enough
5 to ensure that the behavior of the central reinforcing element (1) in response to variations in the temperature of the cable is closer to that of the central core (2) than to that of the outer sheathing (3).
- 10 21. An optical fiber cable according to claim 20, characterized in that the ratio between the diameter (d) of the central core (2) and the thickness (es) of the outer sheathing (3) is greater than 4.
- 15 22. An optical fiber cable according to claim 1, characterized in that the cable also comprises wrapping means (6) for reinforcing the force with which the bare optical fibers (4) are pressed against the central reinforcing element (1).
- 20 23. An optical fiber cable according to any one of claims 1, 2, and 16, characterized in that no liquid, viscous, or semi-liquid element is in contact with the optical fibers (4).
- 25 24. An optical fiber cable according to claim 23 as dependent on claim 1, characterized n that the cable does not include any liquid, viscous, or semi-liquid element.
- 30 25. An optical fiber cable according to claim 1, characterized in that a liquid separator is disposed at the interface between the bare optical fibers (4) and the central reinforcing element (1) in just sufficient quantity to prevent damage to the optical fibers (4)
35 while they are being assembled around the central reinforcing element (1).

26. An optical fiber cable according to claim 1 or claim 16, characterized in that the cable is constituted, successively from the center towards the periphery, by: a central reinforcing element (1) comprising a central core (2) surrounded by outer sheathing (3); a layer of optical fibers (4); a buffer layer (5) of solid and flexible material optionally including reinforcing roving; optional wrapping roving (6) also capable of acting as reinforcement; and an outer sheath (7).
27. An optical fiber cable according to claim 1 or claim 16, characterized in that the cable is constituted successively from the center towards the periphery by: a central reinforcing element (1) comprising a central core (2) surrounded by outer sheathing (3); a layer of optical fibers (4); a buffer layer (5) constituted by a single solid and flexible material; and an outer sheath (7).
28. An optical fiber cable according to claim 16, characterized in that the cable includes no more than six optical fibers (4), and in that the outside diameter (D) of the cable is less than 2 mm.
29. An optical fiber cable according to claim 16, characterized in that the cable includes no more than twelve optical fibers (4), and in that the outside diameter (D) of the cable is less than 2.5 mm.
30. An optical fiber cable according to claim 16, characterized in that the cable includes no more than twenty-four optical fibers (4), and in that the outside diameter (D) of the cable is less than 3.5 mm.
31. An optical fiber cable according to claim 1 or claim 16, characterized in that the cable is a distribution cable.

32. An optical fiber cable according to claim 1 or claim 16, characterized in that the cable is an access cable.